/\* Source Database \*/

create database physician\_performance

use physician\_performance

select \* from phys

/\* Organizations Source Tables \*/

GO

CREATE TABLE [dbo].[org\_measure](

[org\_measure\_id] [int] NOT NULL,

[org\_pac\_id] [bigint] NOT NULL,

[measure\_CD] [varchar](300) NULL,

[measure\_title] [varchar](300) NULL,

[invs\_msr] [char](2) NULL,

[attestation\_value] [char](2) NULL,

[prf\_rate] [int] NULL,

[patient\_count] [int] NULL,

[star\_value] [int] NULL,

[five\_star\_benchmark] [int] NULL,

[collection\_type] [char](10) NULL,

CONSTRAINT [pk\_ck\_org\_measure\_id] PRIMARY KEY CLUSTERED

(

[org\_measure\_id] ASC,

[org\_pac\_id] ASC

)WITH (PAD\_INDEX = OFF, STATISTICS\_NORECOMPUTE = OFF, IGNORE\_DUP\_KEY = OFF, ALLOW\_ROW\_LOCKS = ON, ALLOW\_PAGE\_LOCKS = ON) ON [PRIMARY]

) ON [PRIMARY]

GO

GO

CREATE TABLE [dbo].[org\_performance](

[org\_performance\_id] [int] NOT NULL,

[org\_pac\_id] [bigint] NOT NULL,

[quality\_category\_score] [int] NULL,

[aci\_category\_score] [int] NULL,

[ia\_category\_score] [int] NULL,

[final\_mips\_score] [int] NULL,

CONSTRAINT [pk\_org\_performance\_id] PRIMARY KEY CLUSTERED

(

[org\_performance\_id] ASC

)WITH (PAD\_INDEX = OFF, STATISTICS\_NORECOMPUTE = OFF, IGNORE\_DUP\_KEY = OFF, ALLOW\_ROW\_LOCKS = ON, ALLOW\_PAGE\_LOCKS = ON) ON [PRIMARY]

) ON [PRIMARY]

GO

GO

CREATE TABLE [dbo].[organizations](

[org\_name] [varchar](100) NULL,

[org\_pac\_id] [bigint] NOT NULL,

[state] [char](2) NULL,

[aco\_id\_1] [varchar](50) NULL,

[aco\_name\_1] [varchar](100) NULL,

[aco\_id\_2] [varchar](50) NULL,

[aco\_name\_2] [varchar](100) NULL,

CONSTRAINT [pk\_org\_pac\_id] PRIMARY KEY CLUSTERED

(

[org\_pac\_id] ASC

)WITH (PAD\_INDEX = OFF, STATISTICS\_NORECOMPUTE = OFF, IGNORE\_DUP\_KEY = OFF, ALLOW\_ROW\_LOCKS = ON, ALLOW\_PAGE\_LOCKS = ON) ON [PRIMARY]

) ON [PRIMARY]

GO

GO

ALTER TABLE [dbo].[org\_measure] WITH NOCHECK ADD CONSTRAINT [fk\_org\_pac\_measure] FOREIGN KEY([org\_pac\_id])

REFERENCES [dbo].[organizations] ([org\_pac\_id])

GO

GO

ALTER TABLE [dbo].[org\_measure] CHECK CONSTRAINT [fk\_org\_pac\_measure]

GO

ALTER TABLE [dbo].[org\_performance] WITH NOCHECK ADD CONSTRAINT [fk\_org\_pac\_perf] FOREIGN KEY([org\_pac\_id])

REFERENCES [dbo].[organizations] ([org\_pac\_id])

GO

ALTER TABLE [dbo].[org\_performance] CHECK CONSTRAINT [fk\_org\_pac\_perf]

GO

GO

USE [master]

GO

ALTER DATABASE [Physician\_performance] SET READ\_WRITE

GO

/\*Physician Source Tables \*/

create Table physician

(

npi bigint,

ind\_pac\_id bigint not null,

last\_name varchar (50),

first\_name varchar (50),

CONSTRAINT pk\_ind\_pac\_id PRIMARY KEY (ind\_pac\_id)

)

create table ind\_measures

(

ind\_pac\_id bigint not null,

ind\_measure\_id int not null,

measure\_cd varchar(300),

measure\_title varchar(300),

invs\_msr char(2),

attestation\_value char(1),

prf\_rate int,

patient\_count int,

collection\_type varchar (10),

CONSTRAINT pk\_ind\_measure\_key PRIMARY KEY (ind\_pac\_id ,ind\_measure\_id)

)

create table ind\_performance

(

ind\_performance\_id int Not Null,

ind\_pac\_id bigint not null,

source varchar (100),

quality\_category\_score int,

aci\_category\_score int,

ia\_category\_score int,

final\_mips\_score int

CONSTRAINT pk\_ind\_performance\_key PRIMARY KEY (ind\_performance\_id)

)

ALTER TABLE [dbo].[ind\_measures] WITH NOCHECK ADD CONSTRAINT [fk\_ind\_pac\_measure] FOREIGN KEY([ind\_pac\_id])

REFERENCES [dbo].[physician] ([ind\_pac\_id])

ALTER TABLE [dbo].[ind\_performance] WITH NOCHECK ADD CONSTRAINT [fk\_ind\_pac\_perf] FOREIGN KEY([ind\_pac\_id])

REFERENCES [dbo].[physician] ([ind\_pac\_id])

/\* DataWarehouse \*/

create database physician\_performance\_DW

use physician\_performance\_DW

/\* organization Dimension Tables \*/

create table dim\_organizations

(

[org\_name] [varchar](200) NULL,

[org\_pac\_id] [bigint] NOT NULL,

[state] [char](2) NULL,

[aco\_id\_1] [varchar](50) NULL,

[aco\_name\_1] [varchar](100) NULL,

[aco\_id\_2] [varchar](50) NULL,

[aco\_name\_2] [varchar](100) NULL,

constraint pk\_dim\_org\_pac\_id primary key (org\_pac\_id)

)

CREATE TABLE dim\_org\_measure

(

[org\_measure\_id] [int] NOT NULL,

[measure\_CD] [varchar](300) NULL,

[measure\_title] [varchar](300) NULL,

[invs\_msr] [char](2) NULL,

[attestation\_value] [char](2) NULL,

[collection\_type] [char](10) NULL,

constraint pk\_dim\_measure\_id primary key (org\_measure\_id)

)

CREATE TABLE dim\_org\_performance

(

[org\_performance\_id] [int] NOT NULL,

constraint pk\_dim\_perf\_id primary key (org\_performance\_id)

)

/\* physician Dimension Tables \*/

create table dim\_physician

(

npi bigint,

ind\_pac\_id bigint not null,

last\_name varchar (50),

first\_name varchar (50),

CONSTRAINT pk\_dim\_ind\_pac\_id PRIMARY KEY (ind\_pac\_id)

)

create table dim\_ind\_measures

(

ind\_measure\_id int not null,

measure\_cd varchar(300),

measure\_title varchar(300),

invs\_msr char(2),

attestation\_value char(1),

collection\_type varchar (10),

CONSTRAINT pk\_dim\_ind\_measure\_key PRIMARY KEY (ind\_measure\_id)

)

create table dim\_ind\_performance

(

ind\_performance\_id int Not Null,

source varchar (100),

CONSTRAINT pk\_dim\_ind\_performance\_key PRIMARY KEY (ind\_performance\_id)

)

/\* organization Fact table \*/

create table org\_fact

(

[org\_pac\_id] [bigint] NOT NULL,

[org\_measure\_id] [int] NOT NULL,

[prf\_rate] [int] NULL,

[patient\_count] [int] NULL,

[star\_value] [int] NULL,

[five\_star\_benchmark] [int] NULL,

[org\_performance\_id] [int] NOT NULL,

[quality\_category\_score] [int] NULL,

[aci\_category\_score] [int] NULL,

[ia\_category\_score] [int] NULL,

[final\_mips\_score] [int] NULL

)

alter table org\_fact

add constraint fk\_dim\_org\_pac\_id foreign key (org\_pac\_id) references dim\_organizations(org\_pac\_id),

constraint fk\_dim\_measure\_id foreign key (org\_measure\_id) references dim\_org\_measure(org\_measure\_id),

constraint fk\_dim\_perf\_id foreign key (org\_performance\_id) references dim\_org\_performance(org\_performance\_id)

/\* physician Fact table \*/

create Table physician\_fact

(

npi bigint,

ind\_pac\_id bigint not null,

ind\_measure\_id int not null,

prf\_rate int,

patient\_count int,

ind\_performance\_id int Not Null,

quality\_category\_score int,

aci\_category\_score int,

ia\_category\_score int,

final\_mips\_score int

)

alter table physician\_fact

add constraint fk\_dim\_ind\_pac\_id foreign key (ind\_pac\_id) references dim\_physician(ind\_pac\_id),

constraint fk\_dim\_ind\_measure\_id foreign key (ind\_measure\_id) references dim\_ind\_measures(ind\_measure\_id),

constraint fk\_dim\_ind\_perf\_id foreign key (ind\_performance\_id) references dim\_ind\_performance(ind\_performance\_id)

/\* select Statement for Source \*/

use physician\_performance

select \* from organizations

select \* from org\_measure

select \* from org\_performance

select \* from physician

select \* from ind\_measures

select \* from ind\_performance

/\* select statement for Datawarehouse \*/

use physician\_performance\_DW

select \* from dim\_organizations

select \* from dim\_org\_measure

select \* from dim\_org\_performance

select \* from dim\_physician

select \* from dim\_ind\_measures

select \* from dim\_ind\_performance

select \* from org\_fact

select \* from physician\_fact

**ORDER BY Customers.CustomerID;**

# Queries for SSRS reports

Report 1: select top 50 ind.measure\_title,count(\*) as physician\_count

from dim\_ind\_measures ind

inner join physician\_fact phy on ind.ind\_measure\_id=phy.ind\_measure\_id

group by measure\_title

order by physician\_count desc

Report 2:

select distinct f.org\_measure\_id,org.org\_name,org.state,mea.measure\_title,f.prf\_rate

from dim\_organizations org

inner join org\_fact f

on org.org\_pac\_id = f.org\_pac\_id

inner join dim\_org\_measure mea

on mea.org\_measure\_id=f.org\_measure\_id

where f.quality\_category\_score is not null and f.quality\_category\_score != 0 and f.aci\_category\_score is not null and f.ia\_category\_score is not null

and prf\_rate is not null

group by f.org\_measure\_id, mea.measure\_title,org.state,org\_name,f.prf\_rate

Report 3:

USE [physician\_performance\_DW]

GO

/\*\*\*\*\*\* Object: StoredProcedure [dbo].[Parameterized\_Report] Script Date: 16-12-2019 16:04:06 \*\*\*\*\*\*/

SET ANSI\_NULLS ON

GO

SET QUOTED\_IDENTIFIER ON

GO

ALTER PROC [dbo].[Parameterized\_Report]

@star\_value int

AS

select org.org\_pac\_id,org.org\_name,org.state,f.star\_value

from dim\_organizations org

inner join org\_fact f on org.org\_pac\_id= f.org\_pac\_id

where f.star\_value is not null and f.five\_star\_benchmark is not null and f.star\_value=@star\_value

group by org.org\_pac\_id,org.org\_name,org.state,f.star\_value

Report 4:

Main Report Query:

select distinct top 100 \* from

(select phy.ind\_pac\_id,phy.first\_name,phy.last\_name, fact.final\_mips\_score,

case when fact.final\_mips\_score between 0 and 50 then 'NOT MET' end as MIPS\_Score\_MET

from

dim\_physician phy

inner join physician\_fact fact on phy.ind\_pac\_id= fact.ind\_pac\_id

) query

where query.MIPS\_Score\_MET is not null

Sub Report Query:

select distinct fact.quality\_category\_score,fact.aci\_category\_score,fact.ia\_category\_score from dim\_physician phy

inner join physician\_fact fact on phy.ind\_pac\_id= fact.ind\_pac\_id

where fact.ind\_pac\_id=@ind\_pac\_id

# CODE for R Studio

install.packages("RODBC")

require(RODBC)

library(ggplot2)

library(dplyr)

install.packages("ggthemes")

library(ggthemes)

conn = odbcDriverConnect("Driver={SQL Server};

server=LAPTOP-FAM1SJ3O\\SQLEXPRESS;

database=physician\_performance\_DW;

trusted\_connection=true")

#Code for pie

#Fetching the data

pie\_data<- sqlQuery(conn,"select distinct top 5 state,count(org.org\_pac\_id) as CountOfState from dim\_organizations org

inner join org\_fact fact on org.org\_pac\_id=fact.org\_pac\_id

group by state

order by CountOfState desc")

pie\_data1<- sqlQuery(conn,"select distinct top 5 state,count(org.org\_pac\_id) as CountOfState from dim\_organizations org

inner join org\_fact fact on org.org\_pac\_id=fact.org\_pac\_id

group by state

order by CountOfState asc")

pie\_data

pie\_data1

#Converting to Data frame

df\_pie<- data.frame(state=c("Florida","New York","California","Texas","Pennsylvania"), countofstate=c(pie\_data$CountOfState))

df\_pie1<- data.frame(state=c("Guam","Virginia","Peurto Rico","Columbia","Wyoming"),countofstate=c(pie\_data1$CountOfState))

#Plotting Pie chart using GGPLOT

bp<- ggplot(df\_pie,aes(x="Number of Organizations",y=countofstate,fill=state)) + geom\_bar(width = 1,stat="Identity")

bp

bp1<- ggplot(df\_pie1,aes(x="Number of Organizations",y=countofstate,fill=state)) + geom\_bar(width = 1,stat="Identity")

pie1<- bp + coord\_polar("y",start = 0,)

pie1 + scale\_fill\_brewer(palette = "Blues") + theme\_excel()

pie2<- bp1 + coord\_polar("y",start = 0)

pie2 + scale\_fill\_brewer(palette = "Reds") + theme\_excel()

#Bar chart

#Fetching Data

bar\_data<- sqlQuery(conn,"select distinct(om.collection\_type) as collection\_type , count(orgf.org\_pac\_id)

as Org\_count from org\_fact orgf inner join dim\_org\_measure om on orgf.org\_measure\_id=om.org\_measure\_id

where om.collection\_type is not null

group by om.collection\_type")

bar\_data

#Converting to Data frame

df<- data.frame(collection\_type=c("ATT","QCDR","REG","WI"),org\_count=c(bar\_data$Org\_count))

#Plotting bar chart using GGPLOT

ggplot(data=df,aes(x=collection\_type,y=org\_count)) +

geom\_bar(position=position\_dodge(0.3), stat="identity", width=0.5, fill="Steelblue") +

theme\_minimal() + labs(title="Count of different Measure Categories",x="Measure Category" , y="Organization Count")

#histogram

#Fetching the Data

hist\_data1 = sqlQuery(conn, "select distinct top 100 final\_mips\_score ,quality\_category\_score,aci\_category\_score

from physician\_fact where final\_mips\_score between 80 and 100")

hist\_data1

#Converting to Data frame

hist\_df = data.frame(finalmips=(c(hist\_data1$final\_mips\_score)),qualityscore=c(hist\_data1$quality\_category\_score))

#Plotting Histogram using GGPLOT

ggplot(hist\_df,aes(x=finalmips)) + geom\_histogram(binwidth = 1,color="white",fill="black" ) + theme\_economist()

#line Graph

line\_data<- sqlQuery(conn, "select count(org.org\_pac\_id) as OrgCount,msr.org\_measure\_id

from org\_fact org

inner join dim\_org\_measure msr on org.org\_measure\_id=msr.org\_measure\_id

group by msr.org\_measure\_id")

df\_line<- data.frame(measure=c(line\_data$org\_measure\_id), countorg=c(line\_data$OrgCount))

line\_plot<- ggplot(data = df\_line, aes(x=measure,y=countorg,group=1)) + geom\_line(color="red") + geom\_point()